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The invention relates to a method and a device for encoding video data consisting of one or several bitstreams according to the MPEG-4 standard. In order to avoid any problem when mapping the video elements into the system elements, a specific alignment/fragmentation mechanism is chosen. According to this mechanism, when said video bitstreams are encoded using the syntax mode corresponding to the fragmentation of the Video Object Planes (VOPs) contained in said video data into Video Packets (VPs) and of Video Packets into Data Partitions (DPs), a Video Data Partition is mapped into one or more SL packets (SL1, SL2, SL3, SL4,...), the first Video Data Partition (DP1) start is always mapped to an SL packet start, and the last SL packet transporting the first Data Partition includes the separation marker and up to 7 subsequent bits of the second Data Partition (DP2) in order to obtain byte alignment, the next SL packet starting on the next bit of the second Data Partition.

Fig.2